

Exploring the representation of social justice in the Ghanaian curriculum

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ABSTRACT

This study presents a content analysis of Ghana's English and mathematics curricula. The aim was to determine if the content in both curricula creates awareness of social injustice issues. It was a qualitative study, and data was collected from the official curricula. The study found that the content in the curricula makes a good attempt to represent gender equally in the roles assigned to both genders. However, the content does not create awareness of the availability, accessibility, and distribution of resources. The concepts and examples of socioeconomic issues need to reflect the realities satisfactorily. It was recommended that a conscious effort be made to integrate issues of social injustice in the English and mathematics curricula in the next curricula for the pre-tertiary level.

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1. INTRODUCTION

According to Berry *et al.* [1] social justice guarantees that every member of society has fair access to opportunities and rights, focusing on the concepts of empowerment, human rights, participation, and access. Despite its significance, social injustice is widespread in many Ghanaian organisations and communities, and it is frequently ignored. Scholars contend that education effectively gives people the knowledge and abilities needed to confront these injustices. For people to develop critical awareness and be able to participate in society in a meaningful way, they must possess fundamental literacy and numeracy abilities [2].

In Ghana, the educational curriculum aspires to develop graduates with the confidence and competence to participate as responsible citizens [3], [4]. While the mathematics curriculum seeks to develop creative thinkers who can solve social concerns, the English curriculum emphasizes critical thinking and problem-solving skills [3], [4]. These curriculum objectives support instruction that increases students' awareness of structural injustices, consistent with Freire [5] view of education as a practice of freedom. Wright [6] emphasizes how critical mathematics education helps students develop the ability to evaluate and deal with social, political, and economic challenges. Therefore, this study aims to investigate whether Ghanaian English and mathematics curricula raise awareness of social injustice. It specifically looks at how well these curricula equip students to critically engage with gender discrimination, economic inequality, health inequalities, and educational disparities.

Globally, there are significant differences in how social justice is included in education. Despite the UK's National Curriculum referring to human rights and related themes, Struthers [7] argues that there remains a significant gap between policy intention and the classrooms realities particularly in how human rights education is implemented in English. According to Banerjee *et al.* [8] while caste and gender issues have been addressed in India's educational reforms, these efforts usually do not go far enough to foster critical thinking. Although educational systems in Japan have started to address diversity and inclusion, systemic inequities are still not sufficiently addressed [9]. In Ghana and other African countries, historical injustices such as colonialism and slavery are acknowledged, but curricula often fail to address contemporary challenges like gender inequality and economic disparities [10].

Empirical research conducted in many settings demonstrates the possibilities of incorporating social justice into education. Gutstein [11], students could relate mathematical ideas to structural injustices by utilising mathematics to investigate socio-political circumstances. Similarly, Wonnacot [12] discovered that despite having few curriculum resources, addressing social justice concerns in mathematics promoted students' cognitive and emotional development. Brelia [13] also noted that pupils saw mathematics as a potent instrument for comprehending and changing social concerns. However, research by Olawale *et al.* [14] and Panthi *et al.* [15] reveals barriers such as fear of criticism, lack of resources, diverse students, and disengaging curriculum which hinder the effective integration of social justice themes in classrooms.

Despite global advancements, studies [11]–[13] on social (in)justice recognised the potential of leveraging mathematics to address social injustice. Consequently, the researchers identified specific topics in mathematics to raise awareness on social injustice. It would be prudent to conduct a comprehensive analysis of the entire curriculum to assess its capacity to address issues of social injustice given that the curricula are the official framework for teaching and learning in every country. Hence, Ghana's pre-tertiary curriculum needs to be explored regarding its capacity to address social injustices. Therefore, this study attempts to investigate the content in Ghana's English and mathematics curricula to find out whether it raises awareness of systemic inequalities, empowering learners to become agents of social change.

2. METHOD

The study was qualitative research, which employed content analysis as a method of inquiry. According to Best [16], content or document analysis should be helpful in research, adding important knowledge to the field of study or yielding information that helps evaluate and improve social or educational practices. As a result, this study used content analysis to evaluate Ghana's officially approved curricula to check the extent to which they contain issues of social injustice. A purposive sampling technique was employed to select the official English and mathematics curricula from 9 junior high school (JHS) subjects. This choice for these subjects was because English and mathematics are known to build literacy and numeracy skills, which are foundational skills. The importance of foundational skills for everyday life should be considered. The English and mathematics curricula used for the data collection were valid and reliable because, in Ghana, the curricula are developed and approved by the Ministry of Education, Ghana and the National Council for Curriculum and Assessment. These curricula were reviewed and approved in 2020, making it the current curricula used in all schools.

2.1. Research instrument: content analysis guide for assessing curriculum's social justice themes

A structured content analysis guide was developed to assess Ghana's official English and mathematics curricula methodically. This approach integrated qualitative interpretative methods with the use of AntConc 4.0 software to identify and analyse the presence and context of social justice themes within the curricula. This software was used for keyword analysis in the curricula. AntConc 4.0 assisted the researchers in identifying the context in which keywords such as gender equity, resource distribution, socioeconomic issues [17], and real-world problems [18] were used in the curricula. Although AntConc 4.0 shows the frequency of these keywords' use, the analysis focused on the context rather than the frequency.

Regarding gender, we sought to determine whether the curriculum contents include all genders and biases in examples or language, such as the roles assigned to a particular gender [19]. For resource distribution, we looked for the mentions and the context in which words such as water, electricity/lights, hospital facilities, school, road, and transportation [20] have been used. In addition, we checked if the content creates awareness of how these resources have been distributed in Ghana. The curricula were also analysed to check whether the content creates awareness and opportunities to discuss socioeconomic issues. That is, whether the curricula address mathematical and English concepts relevant to economic disparities and create opportunities to discuss topics like income distribution, wealth gaps, social support, disability, and security. Finally, we analysed the curricula to check whether the real-life problems in the curricula are a true reflection of socioeconomic issues in Ghana.

2.2. Validity and reliability measures

- Validity: the Ghanaian Ministry of Education authorized the examined curriculum in 2020, guaranteeing its applicability and congruence with the nation's educational objectives.
- Reliability: while manual review guarantees interpretative depth and consistency in assessing context, AntConc 4.0 ensures repeatability in keyword frequency analysis.

3. RESULTS

3.1. Gender equity/equality

We interrogated both curricula to determine whether they present a balanced view of gender roles. We interrogated words (nouns, pronouns) that refer to specific genders, descriptions, and examples that may or otherwise be biased towards certain genders. In both curricula, we found that gender representation was generally fair as no examples vividly spelled out the stereotypical roles of males and females in society. Neither were their examples that give one gender more advantage over the other. Regarding distribution, we found instances of the use of proper nouns, common nouns, and pronouns. Generally, neutral pronouns and names were mostly used. The following examples depict how gender is represented in the English and mathematics the curricula.

3.2. English curriculum

Ama in extract 1 is a name for females, while Aziz is a male name; the question Ama poses to Aziz draws attention to the fact that there are supposedly male courses. However, Aziz's response shows that males and females can study every course. It also implies a need for more sensitization of courses read in schools in the Ghanaian community. The example in extract 2 further legitimates the possibility of females owning properties that hitherto may have been regarded as an attribute of men. Extract 3 shows how gender biases were minimized in the English curriculum. It is commendable that some examples in the English language curriculum used neutral pronouns such as I, you, they, them, and there, as shown in extract 3.

Extract 1, "*Ama: Do you think girls should study courses in male-dominated areas?*" [3]

"*Aziz: Yes*" [3]

"*Ama: Why do you think so?*" [3]

Extract 2, "*Her car is over there.*" [3]

Extract 3, "*You're not going to play football today, are you?*" [3]

Extract 4, "*I see things differently.*" [3]

3.3. Mathematics curriculum

Extracts 1 and 2 use the Ghanaian names "Adom" and "Nhyira", both of which can be used for males and females in Ghana. Extracts 1 and 2 illustrate the use of neutral names in the mathematics curriculum. The context of the extract 2 signifies that painting is not a gendered profession. Extract 3 illustrates the use of neutral pronouns in the mathematics curriculum. Notably, all questions stated in the curriculum do not discriminate against any gender about the language used or the context. This is an indication that the 2020 mathematics curriculum took into consideration gender equality in the examples provided. Data gathered showed that no particular gender name was given undue advantage over the other in the mathematics curriculum. Also, the mathematics curriculum did not assign stereotypical roles/professions to either gender. Both males and females were assigned all kinds of professions to indicate that no professions were gendered.

Extract 1, "*Adom earns GhC2500 a month after tax, and his elder brother Arko earns 3 times as much. How much is their total income after 5 years if there are no increases in their earnings?*" [4]

Extract 2, "*Nhyira paints portraits of people for a living. The graph below shows how much she charges based on the time it takes her to paint the portrait. Use the graph to answer the following questions.*" [4]

Extract 3, "*You must buy 2 dozen eggs priced at GH¢10, 3 loaves of bread (each bread is GH¢5), and 5 bottles of juice (each bottle is GH¢8). How much money will you need to take to the grocery store?*" [4]

From the examples of English and mathematics curricula, a reasonable attempt has been made to eradicate gender bias by not assigning stereotypical roles to specific genders. It is commendable that the curricula are being used to enhance gender equity/equality. However, from the data, we realized that the curriculum did not use real data as it pertains to issues of gender equality/equity in Ghana. Data such as the female representation in government, employment rate, and females in science, technology, engineering, and mathematics (STEM). In Ghana would stimulate discussion on gender equality in the classrooms. This, in our

opinion, would not enlighten learners on the issues of social injustice and systemic biases about gender in Ghana. The English and mathematics lessons would transcend solving questions to reasoning about these issues that must be addressed.

3.4. Resource distribution/availability

The English curriculum provided a list of suggested themes/topics for teachers to build their reading materials: Ghana's natural resources, mining, environment, industrialisation in Ghana, energy conservation, education, tourism, and technology. These suggested themes/topics are under the aspect "reading," and it is clearly stated that these suggested themes are non-exhaustive. This implies that teachers have the opportunity to use other materials under this content area. However, whether teachers consider these themes in their teaching is still being determined, as they appear to be only suggested topics. In addition, in their teaching of the themes, it is also unclear whether teachers consider issues relating to social injustice in their treatment of the themes. Further analysis of the English language curriculum content showed no examples nor mentions of equitable distribution of resources. Data gathered from the mathematics curriculum showed that water and schools were mentioned. The extracts below show the context in which these resources were used.

Extract 1, "*Identify angle bisectors and perpendicular bisectors in structures and artifacts such as buildings, water tanks, and boxes in the environment.*" [4]

Extract 2, "*Esi, and Fusena prepared an orange drink by mixing orange squash and water. Esi's drink was made of 2/7 orange squash, and Fusena's was made up of 1/4 orange squash. Whose drink tastes more vital than orange?*" [4]

Extract 3, "*There are 60 boys and 120 girls in a school. So, the school's ratio of boys to girls is $60/120 = 1/2 = 1:2$.*" [4]

Extract 4, "*Agbo walks 4km to school every day, taking 60 minutes. Rukiya takes 45 minutes to cover 4200m. Which of the 2 learners is faster?*" [4]

Extract 5, "*Ampofo and Serwa are 2 learners from a school. Ampofo walks to school daily and Serwa travels to school on a bus daily.*" [4]

i. "*Does the event of Ampofo affect that of Serwa?*" [4]

ii. "*Can the 2 events occur together?*" [4]

Extract 6, "*Conduct a survey (within a small group of learners) by producing a question form (such as the one below) and collecting real information.*" [4]

i. "*What's your favourite school subject?*" [4]

ii. "*What's the most important school subject?*" [4]

iii. "*How much do you spend on bus fare to school every day?*" [4]

From extracts 1 and 2, it can be seen that the mention of water had no relation with the distribution, availability, or access to water, which will generate discussion on injustice in the classroom. Extracts 3 to 6 also mention school, but not in terms of availability or distribution. However, extracts 3 to 6 could generate discussion regarding the proximity to schools since extract 4 reflects the distance 2 learners have to cover to get to a school, and extracts 5 shows how 2 learners get to school. On the other hand, the content and examples in the mathematics curriculum do not mention words such as hospital and electricity. Additionally, issues concerning availability, geographic distribution, access to healthcare facilities, educational infrastructure/opportunities, police stations, employment opportunities, and legal services must appear in the curriculum.

The researchers believe that although the examples are good, they need to provide relevant information about resource distribution in Ghana. Analysis of the mathematics curriculum showed that the portion of the content and examples allocated to create awareness on resource distribution is inadequate. This indicates that the content or examples in the mathematics curriculum do not highlight some major resources, their distribution, and availability.

3.5. Socioeconomic issues

The study also investigated whether the curriculum created opportunities for learners to discuss issues of socioeconomic concern. The suggested themes/topics that teachers may use to build their reading materials in the English curriculum also include diseases and their prevention, festivals, destruction of water bodies, adolescent reproductive health, entrepreneurship, health, and social issues. We have raised issues on under resource distribution and availability. Also, except for the general theme on entrepreneurship, no examples of currencies or wealth creation and distribution were cited. Again, it is not certain if teachers brought such issues up in class for learners to discuss.

In the mathematics curriculum, it was realized that under the concepts “ratio, rate, and proportion” in the curriculum, learners were presented with concepts that were related to tax, interest, and pension benefits (social security and national insurance trust (SSNIT)). Additionally, the rates quoted in the examples were the same as those used in Ghana. The following are some examples in the mathematics curriculum.

Extract 1, “*The VAT rate of Ghana is 12.5%. A man bought an item at GHC 4500.00, VAT inclusive. Calculate:*” [4]

a) “*the basic cost of the item.*” [4]

b) “*the VAT paid by the man.*” [4]

Extract 2, “*The NHIL inclusive price of a television set is GHC1200.00. If the NHIL is charged at a rate of 2.5%, find*” [4]

a) “*the cost of the television set (NHIL exclusive).*” [4]

b) “*the NHIL charged*” [4]

Extract 3, “*Calculate employee/employer contributions to SSNIT under Act 766. A worker’s basic monthly salary is GHC3,256.50. a. Calculate the SSNIT contributions under Act 766,*” [4]

a) “*by the employer*” [4]

b) “*by the employee*” [4]

c) “*What is the total SSNIT contributions at the end of every month?*” [4]

Extracts 1, 2, and 3 are related to issues on tax and pension contributions, which are commendable. However, these issues were addressed under one mathematical concept, which needs to be revised. Additionally, extracts 1 and 2 do not entirely represent the total taxes paid on items, goods, and services in Ghana. Therefore, the examples do not give a true picture of the reality of taxes being paid. The researchers also observed that the curriculum needs to provide content on income distribution, wealth gaps, security, and other socioeconomic issues. From the content and examples discussed under the socioeconomic issues curriculum, it will be practically impossible for learners to be aware of and determine the extent to which social injustice issues exist in Ghana.

3.6. Real-world problems

A careful analysis of the content of the English curriculum revealed that one of the aims of the curriculum is to transform learners into critical thinkers and solvers of real-world problems. However, these statements only appear at the introductory stages of the curriculum but need to be reflected in the strands and sub-strands. The strands and sub-strands primarily are based on equipping learners with the necessary communication skills to be proficient in the English language and placing less emphasis on using the necessary skills and proficiency acquired to question systemic biases and solve societal problems. However, we observed that the curriculum provides the following core competencies: “communication and collaboration, personal development and leadership, creativity and innovation, and critical thinking and problem-solving” [3]. Yet again, the strands and sub-strands failed to unpack these competencies and contextualize them. Data gathered in the mathematics curriculum indicated many real-life concepts and examples. However, most examples are imaginary real-world problems unrelated primarily to Ghana’s social injustice issues. We looked for real-world problems emanating from lived experiences and the Ghanaian societal context, which will enable learners to critically analyse social injustice issues, identify biases, question inequalities, and confidently speak up. The examples depict real-life scenarios. However, most of the examples are made-up scenarios that may not reflect the issues in Ghana.

4. DISCUSSION

From the data analysis, it can be seen that the 2020 English and mathematics curricula promote gender equity/equality, which is supported by several studies [21]–[23]. Studies demonstrate advancements in the integration of gender equity in education, with a particular emphasis on enhancing gender parity in mathematics instruction, an area that has historically presented difficulties, on which this study sheds lighter. According to UNESCO [21] reports, efforts are being made worldwide to attain gender parity in education, which is in line with the sustainable development goals (SDGs). They talk about how new curricula, according to Research and Scientific Innovation Society (RSIS) International and UNESCO, seek to do away with gender stereotypes and promote equitable participation from both genders in disciplines like mathematics and English. Research on innovations in mathematics education examines how including gender views in curricula promotes more egalitarian learning settings. Researchers who examined gender dynamics in mathematics classes, such as Dersch *et al.* [22] and Keller *et al.* [23], discovered that addressing implicit biases and changing instructional strategies can improve student performance for all students; notwithstanding, however, our studies do not explicitly affirm this observation. Research on the relationship between gender and problem-solving in

mathematics highlights how social justice and gender equity concerns are integrated into current curricula to promote problem-solving abilities, which is a critical step toward attaining gender equality in participation and performance. These long-standing gender disparities in STEM representation are a result of these prejudices, which are frequently subtle and first appear in elementary school [24], [25]. Our finding is also in contrast to a study by Tang *et al.* [26], who found that there were inequality and some stereotypes in the mathematics textbooks, and Karama [27], who also found a male bias in all aspects gender (i.e., the use of names, verbs (actions), pictures, pronouns, and professions in textbooks). The content in a curriculum should inform the content in textbooks.

The examples 2020 curriculum did not highlight the real issues of gender equity/equality in Ghana, which means learners will not have bases for insisting on equal opportunities or protesting this injustice, unlike the study by Gutstein [11]. Similar to issues of gender, issues of resource distribution in Ghanaian society are not integrated into the content and examples of the curriculum. However, it is no news that resources are unevenly distributed in Ghana. Evidence from a recent study by Nomah *et al.* [28] on the educational access in Ghana shows that pupils in remote and island communities face sever challenges in reaching school due to infrastructural disparities. In districts like Krachi-East and Krachi-West in the Oti Region, many schools are located on the islands in the Volata lake accessible only by canoe which limit access and participation in education. In healthcare, a study on the spatial distribution of healthcare facilities in rural communities in Kpandai District, in Ghana, showed that people “*from southwestern part of the district have to cover more than 150-197 km to access the 2 major hospitals in the district capital and those in the eastern part of the district cover more than 35-45 km before getting to the district hospital*” [29]. These and other issues revealed by this study could be incorporated into some content of the mathematics curriculum so learners are aware of Ghana’s uneven distribution of resources. This content could generate discussion in the classroom. Learners speak out against these injustices when the facts presented in the curriculum reflect the realities in the country. More importantly, similar interventions could be tailored for other developing and underdeveloped countries across the globe to promote equitable resource redistribution.

The issue was similar to socioeconomic issues. We identified that apart from a few examples under ratio, rates, and proportion, which educate learners on how to calculate tax and social security and national insurance tax, the content in the curriculum, only discusses a few socioeconomic issues which do not generate discussion unlike the findings of Olawale *et al.* [14], who found that “*mathematics educators and student teachers engage in social and critical discourse in the classroom, enabling the students to see mathematics as a tool for confronting issues within society*”. It can be seen that Gutstein [11] presents mathematical concepts and content that address real-world problems on abortion, homosexual marriage, wealth distribution, distribution of scholastic assessment test (SAT) and American college testing (ACT) results by gender, race, and social class, and teenage pregnancy. The mathematics curriculum in Ghana does not.

The data gathered in the curricula showed that the content and examples in the curricula for JHS make an excellent attempt to represent males and females equally. However, the content and examples presented lacks sufficient real examples that address issues on gender equality/equity. Regarding resource distribution, researchers realized that the concepts/content and examples in the curriculum do not create awareness of the availability, accessibility, and distribution of resources in Ghana. Furthermore, the concepts and examples of socioeconomic issues need to be revised, and some of the examples need to reflect the realities of Ghana. Finally, the researchers found that most real-world examples in the curriculum are imaginary and, therefore, do not create awareness of issues of social injustice in Ghana.

5. CONCLUSION

The findings revealed that the content and examples within the current mathematics and English curricula do not provide sufficient opportunities for learners to develop awareness of social injustices. Furthermore, the curricula do not adequately empower learners to address or speak out on such issues, as they offer limited engagement opportunities. As a result, the current curricula fail to effectively engage learners on matters of social injustice in Ghana. Given the national curriculum aim of ensuring that individuals actively participate in Ghanaian society as responsible local and global citizens, this goal has yet to be realized with the existing JHS curricula. It may take another 10 years for the curriculum to be reviewed; it is recommended that curriculum developers incorporate issues of social injustice into the content of the mathematics and English curricula. Additionally, teachers could facilitate classroom discussion and give learners project works that will enable learners conduct research and analyse issues of social injustice. Teachers should create the opportunity for learners to use their mathematical knowledge to critically examine issues on social injustice. Learners’ literacy skills can be developed by encouraging them to present these facts and findings, speak up and write about their findings. Textbook developers could also incorporate social (in)justice issues into the content of textbooks to foster greater awareness among learners. This is because textbooks are made available for self-

learning in Ghanaian schools. Future studies could investigate the extent to which other subject areas address issues of social injustice within the Ghana not discussed in this study.

Using a content analysis technique, the study offered a thorough assessment of the mathematics and English curricula, enabling a thorough comprehension of the shortcomings in addressing themes of social injustice. Furthermore, examining the 2020 curricula guarantees that the conclusions are current and applicable to educators and policy-makers. More significantly, the study provides practical recommendations for raising awareness of social inequities using fundamental literacy and numeracy abilities. Despite all of these advantages, the study has some drawbacks. One, although content analysis offers insightful information on curricula, it needs to pay attention to the real experiences of students and how teachers carry out the curriculum in the classroom. The study findings are limited to Ghana, which limits their generalisability to other contexts. Secondly, it omitted observational and interview data from classrooms, which might have confirmed whether and how instructors already approach social justice concerns in practice. Finally, the conclusions may be strengthened by comparative research with curricula from other nations. Future research endeavours could explore the development of textbooks as a compelling area of investigation. Such research could focus on how textbook authors effectively integrate themes on social injustice into the textbooks to foster greater awareness and understanding among learners.

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C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nterpretation

R : **R**esources

D : **D**ata Curation

O : **O**riginal Draft

E : **E**xperimentation

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Authors state no conflict of interest.

DATA AVAILABILITY

The data that support the findings of this study are openly available in National Council of Curriculum and Assessment (NaCCA) at <https://nacca.gov.gh/common-core-programme-ccp/>

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